

The growing role of the corporate network in the ongoing drive for global competitiveness is fuelling the need to extend the reach of the network and drive for better and more cost-effective access solutions as part of an overall networking strategy.

The purpose of this session is to provide you, a network operator—whether your network provides service to other corporations or whether your network is a corporate asset that your organization depends on for its day-to-day business—with a view of how the access layer of the network is evolving to meet quickly changing end-user demands. Nortel’s Magellan vision of how the network will evolve to support these needs will be presented, as will highlights of Magellan product directions.

About the presenter:

George Abou-Arrage graduated with a BAsC in Applied Sciences, Electrical Engineering in 1967 and a Diploma in Management in 1974, both from the University of Ottawa. He has been with Nortel in various assignments since 1967, including Multimedia Networks, Switching and Information Technology. He is currently Assistant Vice-President and Business Manager Magellan Access, with product management responsibilities for DPN-100, Access and Network Management. He is also responsible for the business interface to Nortel World Trade for the entire Magellan portfolio.

Agenda

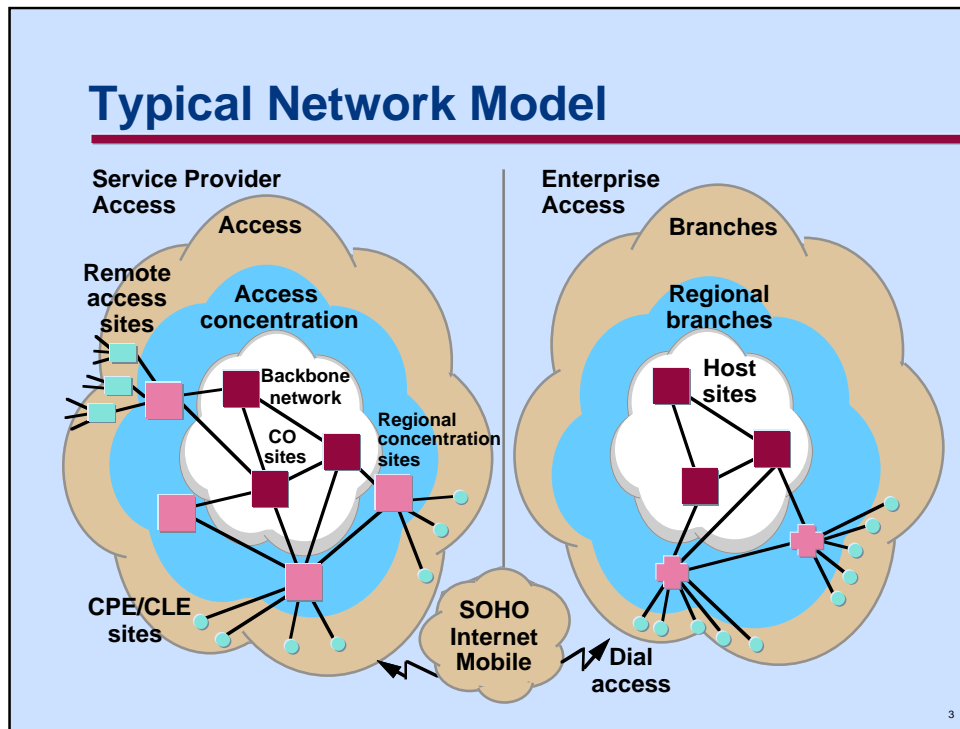
- **Network Access Models**
- **Telefonica Presentation**
- **CIBC Presentation**
- **Magellan Access Vision and Solutions**

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The first section of the presentation will define network access by providing a view of differing access requirements and describing how the term “access” is used.

The majority of the session will be dedicated to customer views of what is happening at the access layer of the network, and to what are seen as drivers of change and needs in the future. Nortel is pleased to have speakers from two leading Magellan customers, Telefónica Transmisión de Datos and Canadian Imperial Bank of Commerce, to share their views on these topics.

The latter part of the presentation will describe the Magellan vision of network access and present highlights of product plans to help customers evolve their networks.



Access means different things to different people. Access may be thought of in three distinct ways:


- Service provider access - two different needs are included in this definition:
 - Remote access concentration refers to small network nodes that are located in remote sites and are used to backhaul traffic to the regional concentration site.
 - Branch access refers to situations where service providers offer CPE/CLE solutions for end-customers' environments such as financial institutions, health care centers, and service industry sites.
- Enterprise access - the requirement to provide a consolidation device to support varying traffic needs within a branch office environment
- Dial access - the requirement is for remote access to service provider or enterprise networks to support a varying degree of end-user applications. Predominant applications include:
 - Mobile workforce access to corporate networks
 - Small office or work-at-home office access to corporate networks
 - Public Internet access

In general, both service provider and enterprise networks have a number of things in common.

Up to 90% of the sites in the network topology can be branch or CPE/CLE sites. Because the number of branch access devices in a network greatly exceeds the number of core backbone nodes, the access solution represents the largest and most costly portion of the entire network.

The connectivity and traffic flow in the network is usually hierarchical in nature, i.e. branches are connected to the regional sites and communicate mainly with the directly connected regional site or one or two central sites. The traffic to other regional sites is less and the traffic to other branch locations may be minimal.

Whereas the regional sites and central sites are normally connected in a mesh topology for highest reliability, network connections to the branch and remote access consolidation sites are different. Usually it is not economically feasible to have multiple connections so the site has a single connection to the closest regional site. Even as bandwidth costs are trending downward, these links are often limited to speeds of 56 kbit/s or 64 kbit/s. Branch availability and reliability then depend on a well designed dial-backup strategy using public facilities such as ISDN.



Telefónica Transmisión de Datos

Mr. David Moulet
Director of Marketing
Telefónica Transmisión de Datos

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Customer views of access will now be presented, starting with the service provider viewpoint by Telefonica.



Telefónica Transmisión de Datos

David Moulet, Marketing Director

Inform 96

Agenda

- **Public Data Networking in Spain**
- **Current Environment**
- **Moving Forward**
- **New Services**
- **Managing the Business**
- **Access**
- **Summary**

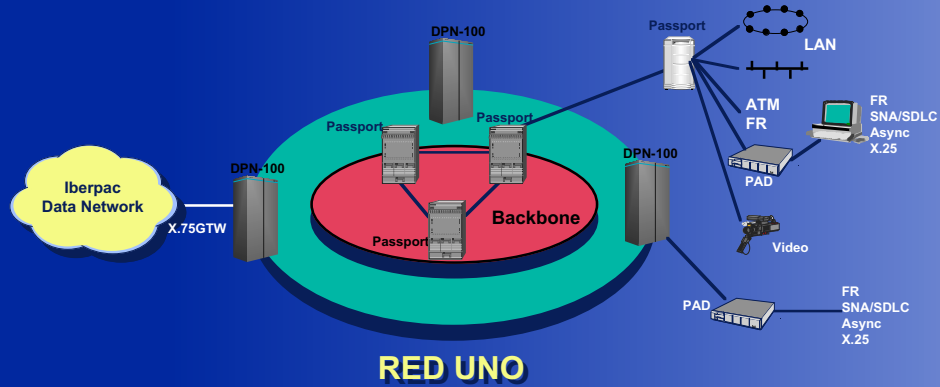


Public Data Networking in Spain

- **1971 IBERPAC Data Network Launched**
 - Telefónica pioneered public data networks
- **1992 Nortel Technology Introduced**
 - Reliability
 - Centralized management
 - New VPN services
- **1996 Telefónica Transmisión de Datos sold to Unisource**
 - Nortel becomes common denominator
 - Seamless across Europe



Current Environment



RED UNO

• RED UNO

- DPN-100 and Passport
- X.25, X.75, Frame Relay, ISDN X.31, SNA/SDLC, X.28
- 34,000 ports (930 FR)
- 300 Customers

• IBERPAC

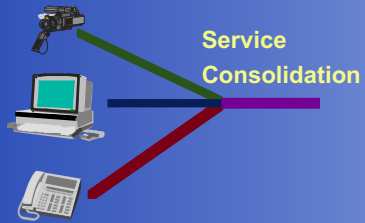
- 52,000 ports (X.25, X.28, X.32)
- 3,500 Customers



Moving Forward

- **Passport Deployment**

- Growing Demand in High Speed Access
Frame Relay ports will triple in 96
- New Services
Consolidated Voice and Data
Video in Corporate Networks
ATM



- **New Clients**



Government



Internet Access Providers



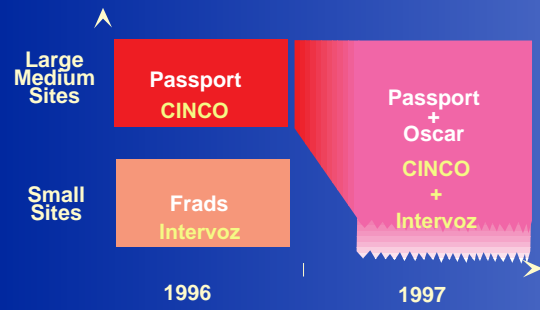
New Services

- **CINCO Service**

- Strategic integrated network service
- Medium-large corporations / sites
- Voice/Data/Video over Passport

- **INTERVOZ Service**

- Basic offering (economy over quality)
- Small companies / sites
- Based on FRADs as transitional technology, evolving to "Oscar" in 1997



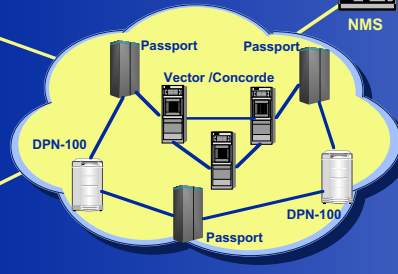
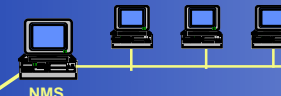
Managing the Business

- Sophisticated management capabilities becoming a key differentiator
- Customer Network management must meet customer expectations

Customer VPN Management



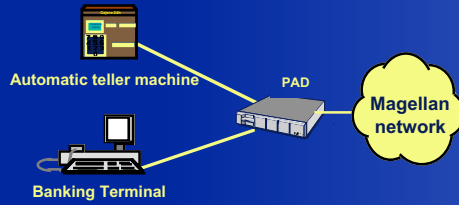
Internal Network Management



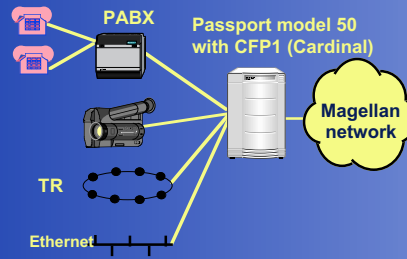
TELEFONICA MAGELLAN NETWORK

Access

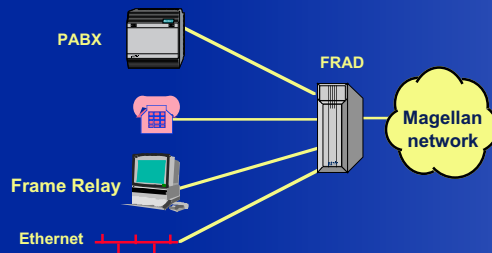
LOW END



HIGH END Servicio Cinco



MID RANGE Servicio Intervoz



Summary

- Large stable network in partnership with Nortel
- Demand for high speed Frame Relay services growing very fast
- New customer and services challenge management objectives
- Passport at CPE's provides solid consolidation toward integrated multimedia
- Access technologies are increasing the number of choices





Canadian Imperial Bank of Commerce

Mr. John Ostime

Director

Telecommunications Services

**Banking, Operations and Information Technology
Group**

**Personal and Commercial Banking Division
Canadian Imperial Bank of Commerce**

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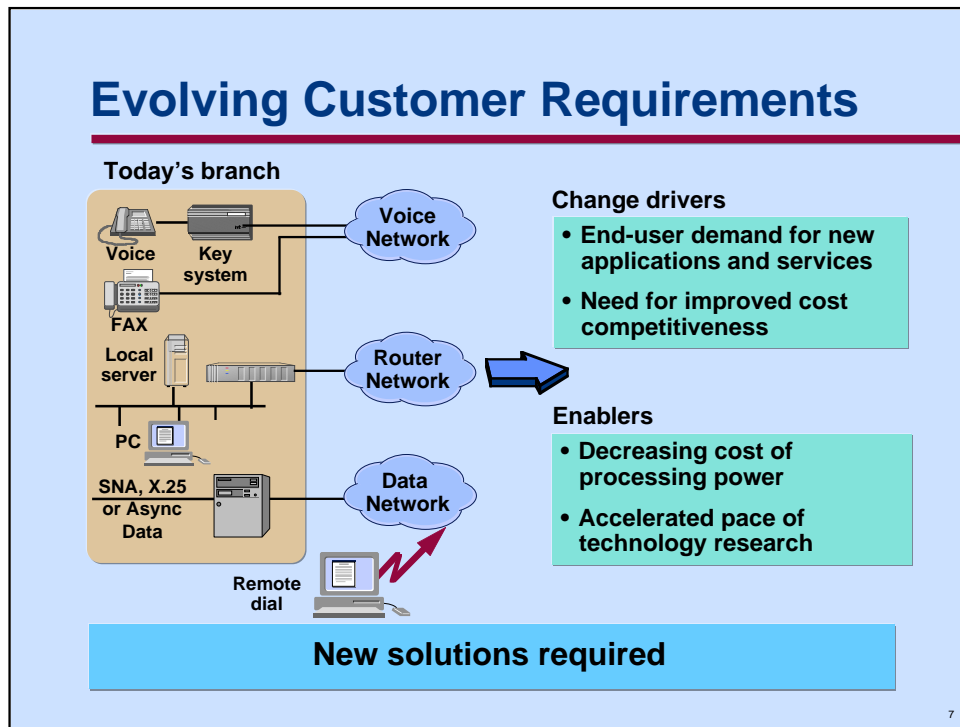
This presentation will highlight the corporate network operator viewpoint by the Canadian Imperial Bank of Commerce.

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This session concludes with Nortel's product solutions for customer's evolving access requirements.



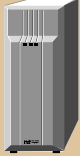

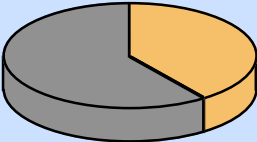
It's obvious that end-user requirements are changing. Global competitiveness and the drive to leaner corporations are fueling need for change. Two key drivers of change are:

- Demand for new applications and services - The ability to cost-effectively integrate applications at the branch level and enable emerging services is the opportunity which will allow corporations to gain a competitive advantage.
- Need for improved cost-competitiveness - The existence of multiple overlapping networks, and in some cases the relatively low utilization of these networks, provides opportunities for cost-reduction through a combination of different network types. Network consolidation can reduce costs by eliminating and/or making more efficient use of facilities and equipment. Also, standardization of technology and its configuration, management and support, through an end-to-end consolidated solution, can also help to make most efficient use of costly and scarce skilled resources and further reduce cost.

DPN-100 evolved to address access layer needs for packet services. The next step is to extend the values and benefits that Magellan customers are now recognizing for multimedia applications on Passport to the branch access layer.

The branch of the future will use a single multimedia access device that can accommodate all traffic types; traditional SNA/X.25/async data, LAN internetworking, voice and video. This device will be cost-effective for branch use, connecting to a regional site or backbone via leased line or public frame relay, and with an ISDN dial-up link for backup or bandwidth on demand. The branch of the future will also have a clear evolution path to ensure that evolving technologies, like ATM, can be fully supported in the networks of the future.

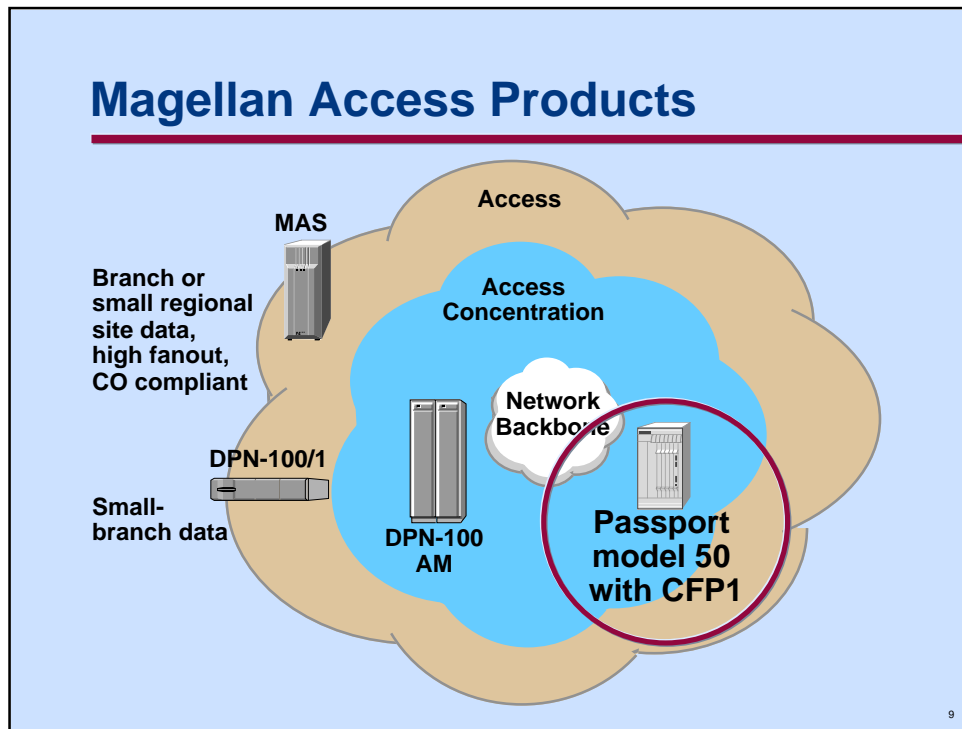
Market-leading Magellan Access Products

<p style="text-align: center;">Magellan Access Switch</p>  <p style="text-align: center;">32-port fanout T1/E1 network links PBX interface Branch or remote access device ITI, X.25, SNA, FR, ISRB Service Support</p> <p style="text-align: center; background-color: #FFD700; padding: 2px;">12,000+ units deployed as of March 1, 1996</p>	<p style="text-align: center;">DPN-100/1</p>  <p style="text-align: center;">10-port panout Branch, CPE/CLE or remote access device ITI, X.25, SNA, frame relay service support</p> <p style="text-align: center; background-color: #FFD700; padding: 2px;">14,000+ units deployed as of March 1, 1996</p>	<p style="text-align: center;">Nortel share of packet switching access market = 40%</p>  <p style="text-align: center; font-size: small;">Source: Dataquest March 1996</p>
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Proven access solutions

Magellan has a proven track record of delivering “best-in-class” access products that are meeting different needs all around the world. For X.25, SNA and async applications, MAS, DPN-100/1 and DPN-100 are delivering superior customer value by extending the benefits that customers have come to expect in the core of the network to the access layer. Nortel is committed to the further evolution of these products to meet new requirements for integrated functionality and to support evolving SNA, X.25 and async applications.

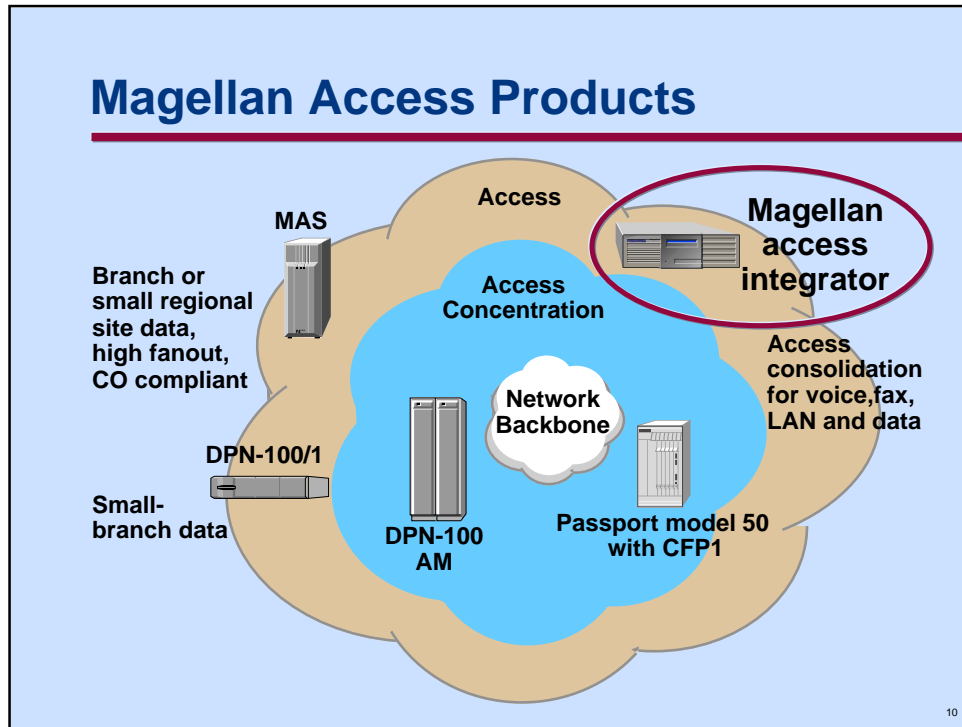
DPN-100 and Magellan Access Switch have traditionally delivered high-value solutions for service provider remote access consolidation or as enterprise branch or CPE/CLE consolidation devices. Passport continues this tradition by providing backbone and regional concentration values for multimedia traffic, in packages that can be economically used for remote access concentration.



A single product solution will not do—a range of products is needed to support different applications; different fanout and performance requirements; and different price points.

Nortel is creating a broad line of products that provide the flexibility to choose the solution that best meets specific business needs. To support this thrust several new products are being introduced:

Passport model 50 with control/functional processor (CFP1) - a new card for Passport model 50 that combines CP/FP functionality to deliver more cost-effective packaging of Passport for regional access concentration.

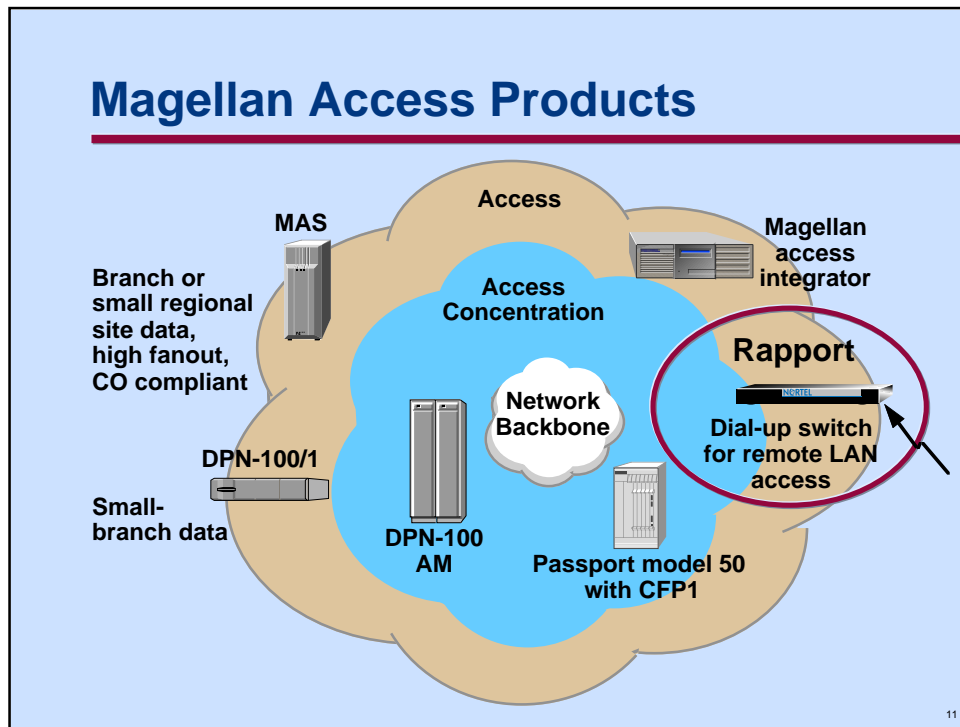


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Magellan Access Integrator (MAI) - a multimedia access platform developed by a leading access vendor, that is branded, sold and supported by Nortel as part of the Magellan product line. Magellan Access Integrator addresses immediate needs for voice, LAN and data consolidation requirements.



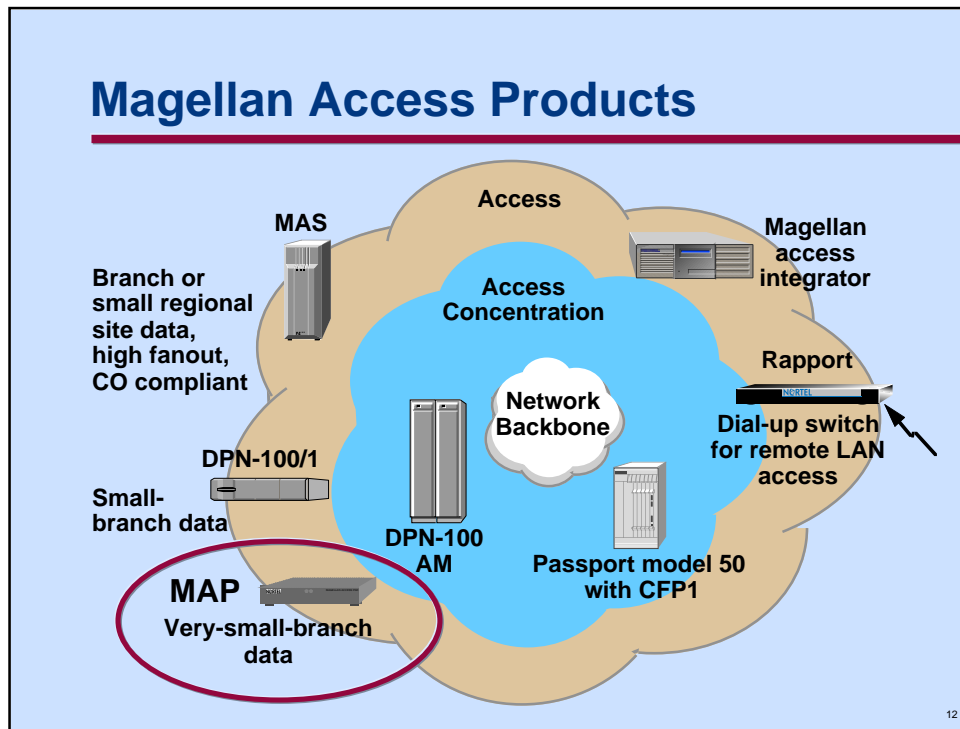
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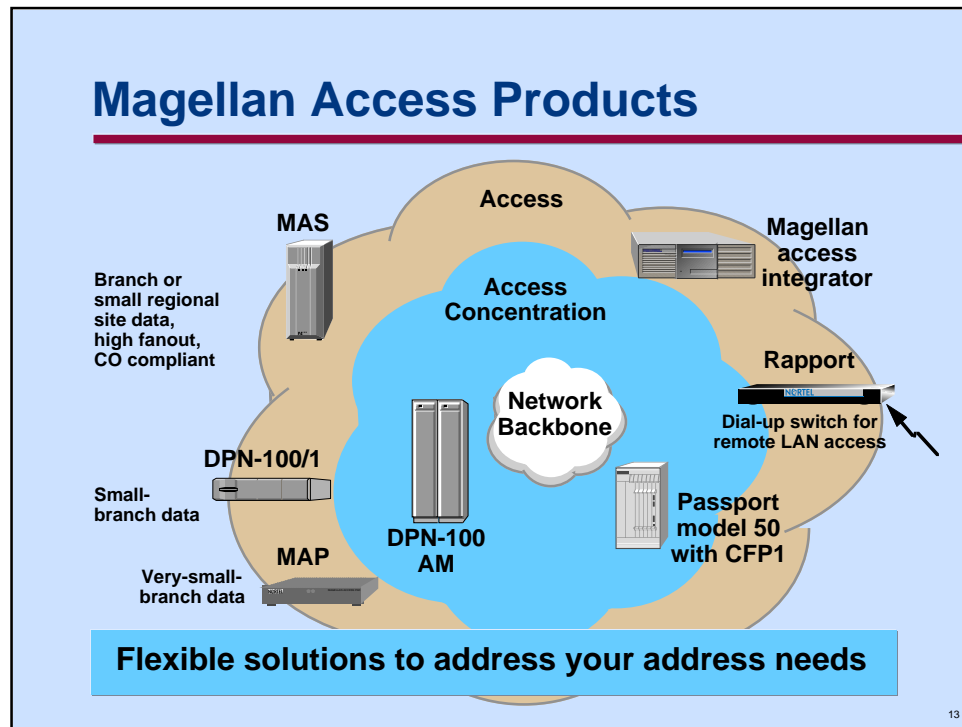
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Magellan Access PAD (MAP) - a scaled down version of the popular DPN-100/1 to meet branch and remote access concentration requirements for up to four ports of SNA, X.25 or async traffic. MAP delivers all the values and benefit of DPN-100, including downloadable software and full Magellan NMS support of DPN-100.



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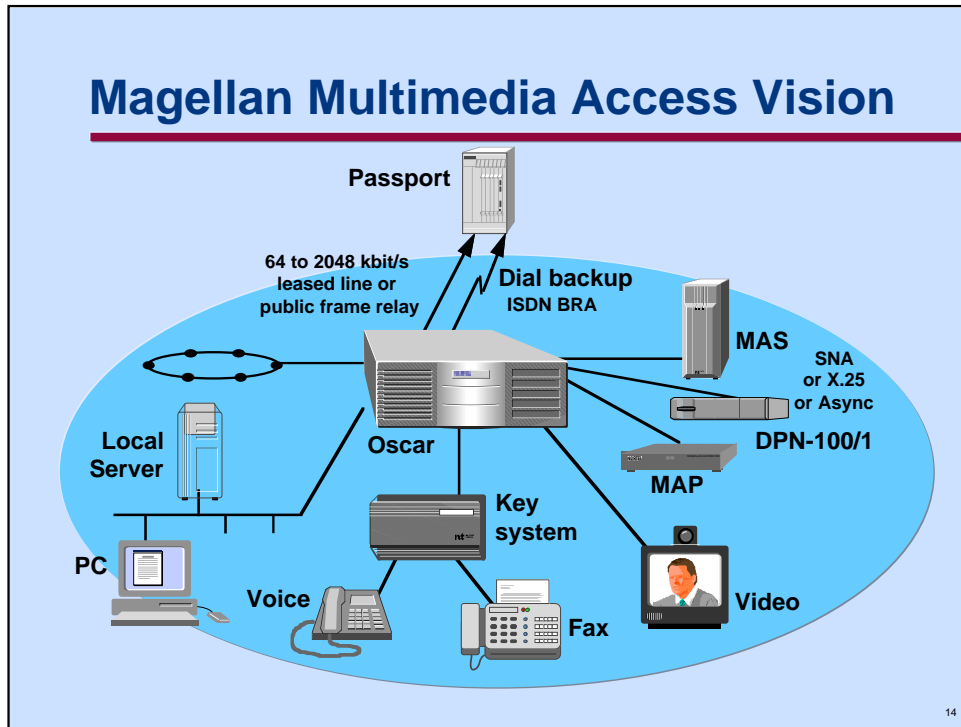
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In addition, several new features and enhancements have been added to Magellan's other Access products - part of Nortel's commitment to evolve them to meet your needs.



But the Magellan vision doesn't stop there—Nortel is working to deliver a multimedia access solution which will provide the ability to cost-effectively integrate applications at the branch level and enable new, emerging services to provide you and your customers with a competitive advantage.

To accomplish this, we are currently developing, a multimedia access device (project name "Oscar") to extend the values and benefits of Passport to the access layer of the network. Oscar has been designed with lead customer input, specifically to complement Passport network solutions.

Summary

- ✓ **Best-in-class solutions to help customers achieve business success**
- ✓ **Proven solutions for wide range of access requirements**
- ✓ **New solutions to address emerging multimedia access needs**

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Magellan is focused on delivering best-in-class solutions that help you manage your business better. Nortel has a range of products to meet different needs. This product line breadth provides the flexibility to mix and match products in either a service provider or enterprise environment, in order to provide an optimum solution for a diversity of network access needs.

Nortel is also aggressively working to deliver new and better access solutions by combining Magellan's existing strengths and capabilities with that of leading vendors in the market place.

For more information about Magellan's access products the following sessions are recommended:

Workshops:

Magellan Access Solutions	Adrian Hatcher
Multimedia Branch Access Solutions	Richard Mayer
Advanced Internet Solutions	Peter Brockmann
DPN-100 Update: Evolving to Meet Customer Needs	Steve Lappan
Magellan LAN Interconnection Products for the Enterprise	Tony Kourlas
Passport Update	David Hudson